REMARKS

Claims 29-62 are pending in the present application. Claims 47-56 and 59-62 were previously withdrawn by restriction. Reexamination of the application and reconsideration of the rejections and objections are respectfully requested in view of the following remarks, which follow the order set forth in the Office Action.

Rejections under 35 U.S.C. § 103

Serpico and Sayari

Claims 29-31, 33-43, 45-46 and 58 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0118887 to Serpico et al. ("Serpico") in view of the document to Sayari et al., Chemistry of Materials 2001, 13, pp. 3151-3168 ("Sayari"), and as evidenced by U.S. Patent Application Publication No. 2002/0028372 to Ohlsen et al. ("Ohlsen"). Applicants respectfully traverse.

Applicants respectfully submit that the claims are patentable because Serpico and Sayari do not teach or suggest, alone or in combination, a material that comprises an organic oligomer or polymer integrated in the walls and bonded covalently to the mineral phase and that has open porosity, which is required by claim 29.

Claim 29 is drawn to a conductive organic-inorganic hybrid material comprising a mineral phase in which walls define pores forming a structured mesoporous network with open porosity. The material further comprises an organic oligomer or polymer integrated in the walls and bonded covalently to the mineral phase, and optionally another phase inside the pores, composed of at least one surface active agent. At least one of the mineral phase and the organic oligomer or polymer have conductive and/or hydrophilic functions. The organic oligomer or polymer and the at least one surface active agent are different from one another in terms of their structure and their effect.

Serpico teaches a composite membrane comprising a polymer and a reinforcing substrate bonded thereto. See Abstract. Serpico also teaches using organic-inorganic hybrid composites for potentially increasing the mechanical integrity of the membrane. See, ¶ [0045]. Serpico teaches that chemical networks of the inorganic materials can be prepared within the structure of the polymer. Id. Further, a co-continuous network can be formed in which the base polymer is incorporated into the inorganic phase. See, Id.

Sayari discloses that nanoscale polymer fibers may be fabricated within the confined void volumes (i.e., pores) of silica mesophase structures. See, p. 3165, right column, 2nd

paragraph. The nanoscale polymer fibers are encapsulated within the constrained space of the mesoporous silica. See, Id. Thus, the nanofabrication of polymer fibers within the silica channels has attracted much attention. Id.

I. Integration in the Walls

The combination of Serpico and Sayari does not teach or suggest all of the limitations of claim 29. Applicants submit that combining the teachings and suggestions of Serpico and Sayari would yield a material with polymer both integrated into the walls and encapsulated within the pores thereof. As stated above, Serpico discloses a material having a co-continuous network of polymer and inorganic phase and Sayari discloses polymer fibers encapsulated within the constrained space of silica tunnels of a mesoporous material that is not described as being structured. See, p. 3165, right col., ¶2. Thus, upon combining Serpico and Sayari, a skilled artisan would arrive at a material with polymer integrated into the walls and encapsulated in the pores. Such a combination does not meet the requirements of claim 29.

Further, there is no reason provided in Sayari and Serpico, alone or in combination, to modify the above combination to yield the material of claim 29. Sayari suggests that polymer fibers within the pores of the mesoporous material contribute to the mechanical strength of material. See, p. 3165, right col., ¶2. Thus, removing the polymer from the pores of Sayari would modify the teaching of Sayari in a manner contrary to the teaching therein. Accordingly, one of ordinary skill in the art would have no reason to combine the teachings of Serpico and Sayari because the teaching of Sayari would be modified contrary to its teaching in order to do so.

II. Open Porosity

Serpico and Sayari, alone or in combination, do not suggest a material with open porosity, as required by claim 29. Serpico teaches "organic-inorganic hybrid composites will also work", with the composites including ceramics, glass, and minerals, as reinforcement to "potentially increase the mechanical integrity of the membrane". See, ¶[0045]. Serpico also teaches "[t]he composites must possess sufficient erosion resistance to work for extended periods in applications intended." Id. Throughout Serpico, mechanical integrity is emphasized. See, ¶ ¶ [0030], [0035], [0045] and [0046]. Thus, Serpico does not suggest choosing a material having open porosity because such a property may decrease the

mechanical integrity and erosion resistance. Further, Sayari suggests that the mechanical strength of the material therein may be derived from having polymer fibers encapsulated within the silica tunnels. See, p. 3165, right col., ¶2. Thus, Sayari does not suggest choosing a material that has open porosity without polymer fibers encapsulated within the silica tunnels. As such, the combination of Serpico and Sayari fails to teach or suggest an organic-inorganic material having open porosity, as required by claim 29.

Based on the foregoing, Applicants submit that claim 29 is not obvious in view of the combination of Serpico and Sayari. Accordingly, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

Serpico and Sayari in combination with Brinker and/or Wu

Claims 32 and 44 were rejected as being unpatentable over Serpico in view Sayari and further in view of Brinker et al., U.S. Patent No. 6,270,846 ("Brinker"). Further, claim 57 was rejected as being unpatentable over Serpico in view of Sayari and further in view of U.S. Patent No. 6,465,052 to Wu ("Wu"). Applicants respectfully traverse.

Applicants submit that neither Brinker nor Wu provide any disclosure that overcomes the defects of the combination of Serpico and Sayari because these references do not suggest a material that comprises an organic oligomer or polymer integrated in the walls and bonded covalently to the mineral phase and that has open porosity, as required by claim 29. Further, neither Brinker nor Wu provides a reason for combining the teachings of Serpico and Sayari. Accordingly, Applicants submit that claims 32, 44, and 57 are not obvious in view of the combination of the cited references. Thus, Applicants respectfully request reconsideration and withdrawal of the instant rejections.

For the foregoing reasons, claims 29-46, 57 and 58 are considered to be allowable. A Notice to this effect is respectfully requested. If any questions remain, the Examiner is invited to contact the undersigned at the number given below.

The Director is hereby authorized to charge any appropriate fees that may be required by this paper, and to credit any overpayment, to Deposit Account No. 23-1925.

Respectfully submitted,

BRINKS HOFER GILSON & LIONE

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